

# ADDITIONS TO THE TERRESTRIAL HERPETOFAUNA OF KOOLAN AND DIRK HARTOG ISLANDS

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## INTRODUCTION

Both Koolan and Dirk Hartog Islands have had a long history of vertebrate collection, including the terrestrial herpetofauna (McKenzie *et al.* 1995; Maryan 1996). However, these annotated lists provided by these authors, for the most part, are based primarily on opportunistic collections without any systematic trapping techniques being employed. As highlighted by How and Shine (1999) and Maryan *et al.* (2009), for those species that are very cryptic, it often requires a considerable length of time by conducting trapping programs to reveal their presence. The sheer vastness of Australia combined with the serendipitous nature in finding cryptic fauna, often makes it a case of simply 'being in the right place at the right time' when using the more conventional opportunistic collecting in making exciting discoveries

(Covacevich *et al.* 1993; Doughty *et al.* 2007).

We present information on additional species of terrestrial herpetofauna from Koolan Island in the Buccaneer Archipelago in the Kimberley recorded by Ecologia Environment and on Dirk Hartog Island at Shark Bay by the Department of Environment and Conservation during series of systematic biological surveys. In addition to this and in light of significant taxonomic changes in Australian herpetology, we also provide updated checklists for both islands to assist field naturalists (Appendix 1).

## KOOLAN ISLAND

Mckenzie *et al.* (1995) reviewed the zoological data available for Koolan Island and cited one amphibian and 35 reptile species. They also suggested that a variety of additional species could occur on Koolan despite its relatively

narrow range of habitats. Subsequently, How *et al.* (2006) used the richness of the Koolan Island herpetofauna as a benchmark against which to assess the richness of other islands surveyed off the Kimberley coast. The surveys conducted by Ecologia Environment between 2004–2008 as part of a terrestrial vertebrate fauna assessment for Aztec Resources Limited (Ecologia Environment 2005) have recorded two additional amphibians and four additional reptiles by spending extended periods of time sampling on the island and using quantitative trapping techniques. These additional species are listed below.

#### LIMNODYNASTIDAE

##### *Limnodynastes lignarius*

Three adults pit-trapped and collected at night adjacent to and in stony creeks during January 2006.

#### HYLIDAE

##### *Litoria coplandi*

One adult head torched in rock pool along creek during July 2004 and several adults observed in creeks during January 2006.

Mckenzie *et al.* (1995) mention that 'two other frog species have been seen on Koolan; both were smaller than *Litoria rubella*, but they have not been identified and no voucher specimens have been taken'. These observations are possibly based on *L. coplandi*, as *L. lignarius* is considerable larger than both hylids.

#### DIPLODACTYLIDAE

##### *Crenadactylus ocellatus naso*

Three adults raked from leaf-litter and dead *Triodia* clumps in open *Eucalyptus* woodland during July 2004 and January 2006.

##### *Diplodactylus conspicillatus*

One adult pit-trapped in open *Eucalyptus* woodland over *Acacia* and dense mixed grasses during October 2007.

#### SCINCIDAE

##### *Morethia ruficauda ruficauda*

Several adults pit-trapped and observed in vine thicket, open *Eucalyptus* woodland and among rocks adjacent to airstrip during July 2004, January 2006 and April 2008.

##### *Proablepharus tenuis*

Several adults pit-trapped and raked from leaf-litter in vine thicket and open *Eucalyptus* woodland during July 2004 and January 2006.

Koolan Island, one of many islands of the Buccaneer Archipelago, encompasses an area of only 2580 ha. but has 42 known species of herpetofauna, of which thirteen are snakes. By comparison with other islands in both the Buccaneer and Bonaparte Archipelagos, this is incredibly rich and it could be anticipated that other similar-sized or larger islands may well support comparable assemblages. Further photographic evidence to support the Mckenzie *et al.* 1995 citation of *Aspidites*

*melanocephalus* was made in July 2004 with one adult collected active at night but the enigmatic single specimen (R26839) of *Ramphotyphlops yampiensis* collected in March 1966 has not changed. Voucher specimens of the additional species recorded have been lodged at the WA Museum.

#### DIRK HARTOG ISLAND

Maryan (1996) reviewed the herpetofauna data available from Dirk Hartog Island and listed one amphibian and 37 reptile species. He also suggested that considering the size of the island and the high number of species on the adjacent mainland, it is possible that future fieldwork would reveal the presence of additional taxa. A series of ongoing surveys commencing in 2005, conducted by the Department of Environment and Conservation to acquire information on the island's flora and fauna before national park declaration, have recorded an additional six reptile species, which are listed below.

#### DIPLODACTYLIDAE

##### *Lucasium alboguttatum*

Several adults pit-trapped in saltbush and *Acacia*-dominated scrub on white sand dunes during November 2005 and September 2008.

#### SCINCIDAE

##### *Lerista connivens*

Several adults pit-trapped in

almost every habitat surveyed, including disturbed areas, during November 2005 and October 2009.

#### PYGOPODIDAE

##### *Aprasia haroldi*

Several adults pit-trapped on coastal pale sands with saltbush, *Acacia*, mingah scrub and buffel grass and inland pale and reddish sands with low *Acacia*, *Grevillea*, *Melaleuca* as well as limestone areas during September 2008 and October 2009.

##### *Delma fraseri*

Two adults pit-trapped in contrasting habitats consisting of a very disturbed buffel grass area and saltbush and *Acacia* shrubs on coastal dunes during October 2009.

##### *Pletholax gracilis edelensis*

Highlighting the importance of conducting trapping programs, an extraordinary total of 28 of these highly cryptic pygopodids have been pit-trapped in almost every habitat surveyed, including disturbed areas, during November 2005, May 2006 and September 2008.

#### TYPHLOPIDAE

##### *Ramphotyphlops australis*

Several adults pit-trapped in the same assortment of habitats as *A. haroldi* during May 2006 and September 2008.

The Shark Bay area on the mid-west coast of Western Australia is notably rich in herpetofauna

with 118 species and subspecies recorded (Storr and Harold 1990). Dirk Hartog Island, the western most land point of Australia, is the largest island in the area, encompasses an area of 62, 000 ha. and has 43 species of herpetofauna now recorded. As mentioned by Maryan (1996) the island's herpetofauna consists of species that have primarily coastal or near coastal distributions as well as species that are widespread throughout Australia. The Shark Bay area is also notable for herpetofaunal endemism and disjunct populations of species on Edel Land that re-occur much further south. The additional species recorded are all present on the adjacent Edel Land peninsula with both the pygopodids *A. haroldi* and *P. g. edelensis* being endemic to the region, although the latter extends southerly to the regionally significant Kalbarri National Park. Voucher specimens of the additional species recorded have been lodged at the WA Museum.

### CONCLUSIONS

With regards to Australia's incredibly diverse herpetofauna, the documentation of range extensions, additional records on islands and even within Australian states as well as the discovery of new species will always be ongoing. Systematic surveys that employ a combination of trapping and standard foraging techniques provide

opportunities to enhance our knowledge and understanding of local distribution, habitat preferences and relative abundance for many species which is particularly important on islands. Some of the most important nature reserves in Western Australia are islands (Burbidge and Mckenzie 1978) as some harbour species which are rare or extinct on the mainland, have unique assemblages, endemic species or subspecies of animals and plants, and almost all have been unaffected by exotic animals. For these reasons, it is important to maintain flora and fauna inventories for islands and publish any new findings.

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## APPENDIX 1

List of amphibian and reptile species known from Koolan and Dirk Hartog Islands.

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### KOOLAN ISLAND

#### Limnodynastidae

*Limnodynastes lignarius*

#### Hylidae

*Litoria coplandi*

*L. rubella*

#### Crocodylidae

*Crocodylus porosus*

#### Diplodactylidae

*Crenadactylus ocellatus naso*

*Diplodactylus conspicillatus*

*Oedura gracilis*

*O. obscura*

*O. rhombifer*

#### Gekkonidae

*Gehyra australis*

*G. nana*

*G. occidentalis*

*Heteronotia binoei*

*H. planiceps*

#### Pygopodidae

*Delma borea*

*Lialis burtonis*

#### Agamidae

*Diporiphora bennettii*

#### Scincidae

*Carlia amax*

*C. triacantha*

*Cryptoblepharus metallicus*

*Ctenotus inornatus*

*Cyclodomorphus maximus*

*Eremiascincus isolepis*

*Morethia ruficauda ruficauda*

*Proablepharus tenuis*

*Tiliqua scincoides intermedia*

#### Varanidae

*Varanus acanthurus*

*V. glebopalma*

*V. glauerti*

#### Typhlopidae

*Ramphotyphlops kimberleyensis*

*R. yampiensis*

#### Pythonidae

*Antaresia childreni*

*Aspidites melanocephalus*

*Liasis olivaceus olivaceus*

#### Colubridae

*Boiga irregularis*

*Dendrelaphis punctulata*

#### Elapidae

*Acanthophis praelongus*

*Demansia papuensis*

*D. quaesitor*

*Furina ornata*

*Oxyuranus scutellatus*

*Pseudechis australis*

### DIRK HARTOG ISLAND

#### Myobatrachidae

*Arenophryne rotunda*

#### Carpodactylidae

*Nephrurus levis occidentalis*

*N. milii*

**Diplodactylidae**

*Crenadactylus ocellatus horni*  
*Diplodactylus ornatus*  
*Lucasium alboguttatum*  
*Strophurus spinigerus spinigerus*

**Gekkonidae**

*Gehyra variegata*  
*Heteronotia binoei*

**Pygopodidae**

*Aprasia haroldi*  
*Delma butleri*  
*D. fraseri*  
*Lialis burtonis*  
*Pletholax gracilis edelensis*  
*Pygopus lepidopodus*

**Agamidae**

*Ctenophorus butleri*  
*C. maculatus maculatus*  
*C. reticulatus*  
*Pogona minor minor*

**Scincidae**

*Cryptoblepharus plagiocephalus*  
*Ctenotus australis*  
*C. fallens*  
*C. youngsoni*

*Cyclodomorphus celatus*  
*Egernia stokesii badia*  
*Lerista connivens*  
*L. elegans*  
*L. lineopunctulata*  
*L. planiventralis planiventralis*  
*L. praepedita*  
*L. varia*  
*Menetia greyii*  
*Morethia lineocellata*  
*Tiliqua rugosa palarra*

**Varanidae**

*Varanus gouldii*

**Typhlopidae**

*Ramphotyphlops australis*

**Pythonidae**

*Antaresia stimsoni stimsoni*

**Elapidae**

*Brachyurophis fasciolatus fasciolatus*  
*Demansia calodera*  
*D. psammophis reticulata*  
*Pseudechis australis*  
*Pseudonaja mengdeni*  
*Simoselaps littoralis*